



US006542593B1

(12) **United States Patent**  
Bowman-Amuah

(10) Patent No.: **US 6,542,593 B1**  
(45) Date of Patent: **Apr. 1, 2003**

(54) **RULES DATABASE SERVER IN A HYBRID COMMUNICATION SYSTEM ARCHITECTURE**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

WO	WO 98/18237	4/1998
WO	WO9821676 A	5/1998
WO	WO9823079 A	5/1998
WO	WO9834391 A	8/1998
WO	WO9837665 A	8/1998
WO	WO9837688 A	8/1998
WO	WO9842102 A	9/1998
WO	WO9844712 A	10/1998
WO	WO9847298 A	10/1998
WO	WO9848542 A	10/1998
WO	WO9925085 A	5/1999
WO	WO 99/34587	7/1999

#### OTHER PUBLICATIONS

(21) Appl. No.: **09/324,365**

(22) Filed: **Jun. 2, 1999**

(51) Int. Cl.<sup>7</sup> ..... **H04M 3/42; H04L 12/28; G06F 15/173**

(52) U.S. Cl. .... **379/201.03; 370/252; 370/232; 370/395.21; 709/224**

(58) Field of Search ..... **370/351, 352, 370/357, 354, 355, 356, 229-235, 236.1, 252, 395.21, 395.42, 468; 379/201.01-201.05, 114.01-114.14, 90.01, 202.01, 219, 220.01-221.07**

(56) **References Cited**

#### U.S. PATENT DOCUMENTS

4,464,543 A	8/1984	Kline et al.
4,529,842 A	7/1985	Levy et al.

(List continued on next page.)

#### FOREIGN PATENT DOCUMENTS

EP	0941010 A2	9/1999
EP	0944209 A2	9/1999
FR	2728367	6/1996
JP	9231277	9/1997
JP	9231278	9/1997
WO	WO9524094	9/1995
WO	WO9624210 A	8/1996
WO	WO9638018 A	11/1996

Aidarous S.E. et al., "Serve Management In Intelligent Networks", IEEE Network, IEEE Inc., NY, US, vol. 4, No. 1, 1990, pp. 18-24.

Allen, Anne L., "When it Comes to Pricing Your Services, Are You a Sitting Target", Jul.-97, Dialog reference, file 15 #Q1449289, Trusts & Estates V136n8, pp. 26-30.

(List continued on next page.)

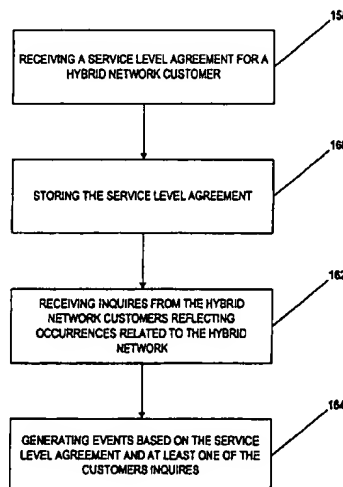
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(57) **ABSTRACT**

According to a broad aspect of a preferred embodiment of the invention, telephone calls, data and other multimedia information is routed through a hybrid network which includes transfer of information across the internet utilizing telephony routing information and internet protocol address information. The hybrid network includes an rules database which determines subscriber profile information. The information includes routing references based on priority, cost and termination location. In addition, content separation is provided, including instructing an intelligent peripheral and protocol converter to separate the audio stream from the data and video stream.

**18 Claims, 43 Drawing Sheets**



## U.S. PATENT DOCUMENTS

4,608,693	A	8/1986	Baranyai et al.	
4,935,956	A	6/1990	Hellwart et al.	
4,972,453	A	11/1990	Loeb et al.	
4,987,538	A	1/1991	Johnson et al.	
4,999,833	A	3/1991	Lee	
5,014,267	A	5/1991	Tompkins et al.	
5,285,494	A	2/1994	Sprecher et al.	
5,287,270	A	2/1994	Hardy et al.	
5,295,244	A	3/1994	Dev et al.	395/161
5,325,290	A	6/1994	Cauffman et al.	
5,333,183	A	7/1994	Herbert	
5,341,377	A	8/1994	Ohtani	
5,347,305	A	9/1994	Bush et al.	
5,357,564	A	10/1994	Gupta et al.	
5,461,611	A	10/1995	Drake, Jr. et al.	370/54
5,515,425	A	5/1996	Penzias et al.	
5,559,527	A	9/1996	Quinn	
5,629,938	A	5/1997	Cerciello et al.	
5,650,994	A	7/1997	Daley	
5,652,787	A	7/1997	O'Kelly	379/112
5,666,481	A	9/1997	Lewis	
5,684,965	A	11/1997	Pickering	
5,694,548	A	12/1997	Baugher et al.	395/200
5,696,906	A	12/1997	Peters et al.	
5,742,762	A	4/1998	Scholl et al.	
5,745,883	A	4/1998	Krist et al.	
5,761,650	A	6/1998	Munsil et al.	
5,774,532	A	6/1998	Gottlieb et al.	
5,790,634	A	8/1998	Kinser, Jr. et al.	
5,790,642	A	8/1998	Taylor et al.	
5,799,072	A	8/1998	Barak et al.	
5,799,073	A	8/1998	Fleischer, III et al.	
5,802,160	A	9/1998	Kugell et al.	
5,809,120	A	9/1998	Montgomery et al.	
5,822,744	A	10/1998	Kesel	
5,828,737	A	10/1998	Sawyer et al.	
5,835,081	A	11/1998	Oka	
5,842,183	A	11/1998	Delfer, III et al.	
5,852,659	A	12/1998	Welter, Jr.	
5,862,203	A	1/1999	Wulkan et al.	
5,862,329	A	1/1999	Aras et al.	
5,864,823	A	1/1999	Leviton	105/14
5,867,494	A	2/1999	Krishnaswamy et al.	
5,867,495	A	2/1999	Elliott et al.	
5,867,653	A	2/1999	Aras et al.	
5,878,130	A	3/1999	Andrews et al.	
5,892,754	A	4/1999	Kompella et al.	
5,893,077	A	4/1999	Griffin	
5,896,445	A	4/1999	Kay et al.	
5,898,688	A	4/1999	Shaffer	
5,907,607	A	* 5/1999	Waters et al.	379/207
5,913,036	A	6/1999	Brownmiller et al.	
5,915,008	A	6/1999	Dulman	
5,917,817	A	* 6/1999	Dunn et al.	370/352
5,918,213	A	6/1999	Bernard et al.	
5,933,425	A	8/1999	Iwata	
5,933,489	A	8/1999	Sensabaugh et al.	
5,940,471	A	8/1999	Homayoun	
5,943,657	A	8/1999	Freestone et al.	
5,944,795	A	8/1999	Civanlar	709/227
5,950,174	A	9/1999	Brendzel	
5,956,720	A	9/1999	Fernandez et al.	
5,960,416	A	9/1999	Block	
5,966,698	A	10/1999	Pollin	
5,970,065	A	* 10/1999	Miloslavsky	370/352
5,970,403	A	10/1999	Alperovich et al.	
5,978,855	A	11/1999	Metz et al.	
5,982,362	A	11/1999	Crater et al.	
5,987,107	A	11/1999	Brown	
5,987,430	A	11/1999	Van Horne et al.	
5,991,378	A	11/1999	Apel	
5,991,381	A	11/1999	Bouanaka et al.	
5,991,806	A	11/1999	McHann, Jr.	
5,995,606	A	* 11/1999	Civanlar et al.	379/201
5,995,946	A	11/1999	Auzenne et al.	
5,999,525	A	* 12/1999	Krishnaswamy et al.	370/352
5,999,604	A	12/1999	Walter	
6,005,926	A	12/1999	Mashinsky	
6,006,205	A	12/1999	Loeb et al.	
6,011,838	A	1/2000	Cox	
6,026,379	A	2/2000	Haller et al.	
6,031,904	A	* 2/2000	An et al.	379/201
6,034,950	A	3/2000	Sauer et al.	
6,044,355	A	3/2000	Crockett	
6,044,362	A	3/2000	Neely	
6,052,447	A	4/2000	Golden et al.	
6,052,671	A	4/2000	Crooks et al.	
6,055,240	A	4/2000	Tunncliffe	
6,070,150	A	5/2000	Remington et al.	
6,081,518	A	6/2000	Bowman-Amuah	
6,101,481	A	8/2000	Miller	
6,119,109	A	9/2000	Muratani et al.	
6,134,223	A	10/2000	Burke et al.	
6,147,975	A	11/2000	Bowman-Amuah	
6,157,648	A	12/2000	Voit et al.	
6,195,697	B1	2/2001	Bowman-Amuah	
6,216,169	B1	4/2001	Booman et al.	

## OTHER PUBLICATIONS

Barcia et al., "Quality as a measurement of customer perception and satisfaction in mobile TLC", IEEE 96' Int. Conf. Comm. Tech. Proc.; (5/96), pp. 400-403.

Caldwell et al., "A unified operating environment for customer service", IEEE GLOBECOM '90, (12/90), pp. 1472-1477.

Campbell et al., "A Continuous Media Transport And Orchestration Service", ACM 1992, pp. 99-110.

Elliott, M., "Focus On Consumer Hot Buttons", Dialog reference, file 15 #01100550, Sep.-98, Bank Management, v71n5, pp. 70-73.

Envive Press Release on Service Level Site for SAP R3 (Aug. 31, 1998).

Ferrari D. et al., "Charging for Qos", 1998 Sixth Int'l Workshop on Quality of Service (IWQOS '98), Napa, CA (May 18-20, 1998), pp. VII-VIII.

Gibbs W., "Snap, Crunch or GigaPOP?," Scientific American vol. 275 Dec 96p 38+.

Healey J., San Jose Mercury News—Jan. 10, 1998—Business Section, p. 1C "Quest Goes the Distance."

Hollevoet, F., "The any-Media Call Centre", British Telecommunications Engineering, GB, British Telecommunications Engineering, London, vol. 17, No. Part 2 (Aug. 1, 1998) pp. 155-159.

Jander M., "Network Management/Analysis" Data Communications, US, McGraw Hill, NY, vol. 27, No. 1, 1998, pp. 101-102.

Jin et al., "Performance Management In Packet Switched Networks; A New Approach to Delay Distribution Bounding For Packet Voice Service", Proceedings of the Midwest Symposium on Circuits and Systems, US, NY, IEEE, vol. Symp. 32 (Aug. 14, 1989), pp. 1178-1181.

Lautenbacher M.E. et al., "Intelligent Internet: Value-Added Services by Interworking Between Network Technologies", ISS. World Telecommunications Congress (Int'l Switching Symposium), CA, Toronto, Pinnacle Group (Sep. 21, 1997), pp. 45-51.

- Lee, "Evolving methodologies for reporting from the field", IEE Conf. Record, GLOBECOM '88, (12/88) pp. 456-458.
- Mackay, K. "Satisfying the Customer in The B-ISDN", Proceedings of the Int'l Switching Symposium, JP, Tokyo, IEICE, vol. SYMP. 14, (Oct. 25, 1992), pp. 153-157.
- Magedanz T. et al., "Towards Pan-European IN Services—IN Interworking and IN Management Issues", Proceedings of the Int'l Switching Symposium, De, Berlin, VDE Verlag, vol. Symp. 15 (Apr. 23, 1995), pp. 112-116.
- Mersha, T., "Attributes of Service Quality: The Consumers' Perspective", Dialog reference, 1992 file 15 #00659002. Int'l Journal of Service Management V3n3 pp: 34-45.
- "NetCool Suite Overview," Micromuse (1994), 3 pages.
- O'Shea, D., "Lights Out", Dialog reference, file 15 #01671128, Telephony V235n3, Jul.-98, pp. 6-10.
- Pfeifer, T. et al., "Intelligent Handling of Communication Media", Proceedings, IEEE Workshop on Future Trends of Distributed Computing Systems, XX, XX, (Oct. 29, 1997), pp. 144-151.
- Reininger et al., "Market Based Bandwidth Allocation Policies for QoS Control in Broadband Networks", ACM, 1998.
- Seddon, J., "Change management thinking," Management Services, vol. 41, No. 9, pp. 18-22.
- Statement Regarding Petition to Make Special, n.d.
- \* cited by examiner